

California Integrated Waste Management Board

Board Meeting

March 15-16, 2005

AGENDA ITEM 5 (Revised)

ITEM

Discussion Of Survey On Barriers To Construction And Demolition Material Reuse and Recycling

I. ISSUE/PROBLEM STATEMENT

At the April 14, 2004 Board meeting the Board directed staff to create a cross-divisional work group to identify Construction and Demolition (C&D) reuse and recycling barriers in California. The cross-divisional work group was formed in early May and the first meeting was held on May 19, 2004. The group includes staff from the Diversion, Planning and Local Assistance Division; Permitting and Enforcement (P&E) Division; and Waste Prevention and Market Development Division. The work group determined that it should study the C&D marketplace from all perspectives, identify stumbling blocks and barriers to development of C&D markets and the development of C&D material processing activities, identify regulatory barriers, study the management infrastructure of C&D material handling, and report back to the Board with its findings.

This item reports the results of a survey that the group conducted to determine stakeholder opinions relative to barriers to the reuse and recycling of C&D materials. This item also provides additional information collected by the work group. An update on the status of known C&D handling activities is included as well as an update on the implementation of the C&D model ordinance, local ordinances, and Board-provided C&D related grants and loans.

II. ITEM HISTORY

- On May 14, 2003 the Board discussed how certain unique C&D/Inert (CDI) Debris Processing requirements compared to current regulations for municipal solid waste (MSW) transfer/processing and landfills, and how they compared to proposed regulations for C&D Waste and Inert Debris Disposal. The Board directed staff to return in July 2003 with more in-depth analysis.
- On July 7, 2003 the Board's P&E Committee discussed a staff analysis of the implications of applying each of the unique requirements to the regulation of other waste types and directed staff to return after collecting stakeholder feedback on the analysis of these unique requirements.
- On January 13, 2004, the Board discussed further staff analysis of the implications of applying each of the unique requirements to the regulation of other waste types and directed staff to continue analysis and finalize recommendations for four components after reporting on the status of the regulations on existing C&D processing activities.
- On April 14, 2004, the Board supported staff in creating a cross-divisional work group to identify C&D reuse and recycling barriers in California. The Board also directed staff to continue to work with Local Enforcement Agencies (LEAs) to resolve outstanding site-specific issues relative to the permitting of known C&D debris processing activities and return to the Board with a progress report.

Text shown in single underline (with the exception of paragraph headings) and single strikethrough depict changes made shortly after the item was published.

III. OPTIONS FOR THE BOARD

This is a discussion item only.

IV. STAFF RECOMMENDATION

No action is being requested at this time.

V. ANALYSIS

A. Key Issues and Findings

1. Survey of Barriers to Reuse and Recycling of C&D Debris in California

The work group, through discussion and consultation with CIWMB management, determined that the first step in examining C&D issues was to obtain stakeholder opinions on barriers to C&D reuse and recycling. The work group produced an electronic survey and sent it to 2,433 individuals in October 2004. The recipients included all known C&D handlers, C&D recycling advocates, construction industry representatives, LEAs, solid waste industry representatives, individuals on a distribution list used for review and comment on the CDI debris processing regulations, and individuals on the general CIWMB Board and Committee agenda mailing list.

Survey participants were asked to identify and rank the 5 most significant C&D material reuse and recycling barriers from a list of 12 possibilities (see Attachment 1). Participants could select more detailed “sub-barrier” descriptions or associations (see Attachment 1), or write in their own barrier if it was not listed in the survey.

The survey response rate was 5.5% (135 of 2,433). A sample size this low cannot be considered scientific or statistically representative. However, within three primary respondent groups, the response rate was 15%. Of the 135 responses received, 65 were from Public Non-Regulatory Agencies, 49 were from the private solid waste industry, and 21 were from LEAs. The top barriers tally for the total of all respondents is:

1. Facilities (24 respondents)
2. Lower-Cost Options (18 respondents)
3. a. Business Difficulty for Recycler/Processor (15 respondents)
b. Local Ordinances, Plans, Policies, Programs & Procedures (15 respondents).

Other barriers were scattered among the remaining survey choices and were significantly lower in number than these top barriers.

For the three primary respondent groups, their opinions varied considerably regarding which barriers and sub-barriers were ranked high. And, some barriers that were not in the overall top set were more important to a particular respondent group. The top three barriers identified by these three groups are as follows:

Non-Regulatory Public Agencies

1. Lower-Cost Options
 - Cheap disposal – landfill rates may be lower than processing fees
 - Grinding materials for biomass or ADC
 - Demolition is cheaper than deconstruction
2. Facilities
 - Siting difficulties because of noise, dust, traffic, etc.
 - Too few facilities to handle mixed C&D and dry wall, especially in rural areas
 - Too few “last chance, buy-back” facilities for salvaged C&D material

3. Business Difficulty

- High operational costs,
- Insufficient markets and unstable commodity prices for some materials
- Unpredictable/unreliable C&D material flow

Private Solid Waste Industry

1. C&D Debris Processing Regulations

- Low permit tier placement thresholds
- Stigma of being a "Solid Waste Handler"
- The "no residual" restriction on "C&D-like" loads

2a. CIWMB Legislative Issues

- No C&D disposal ban
- Beneficial reuse competition at landfills
- Inconsistent, conflicting, and/or over-restrictive: CIWMB regulations and/or CEQA

b. Local Ordinances, Plans, Policies, Programs and Procedures

- Insufficient building permit diversion deposits
- Lack of implemented ordinances, long development process, ordinances that don't require reuse, and inadequate ordinance enforcement
- Insufficient local economic incentives

3. Markets

- Inadequate markets for: concrete, asphalt roofing and wood shingles, discarded carpet, gypsum/wallboard material, organics/wood waste, painted lumber, soil, and stucco
- No mandate to use recycled base

LEAs

1a. C&D Debris Processing Regulations

- Low permit tier placement thresholds
- Stigma of being a "Solid Waste Handler"
- The "no residual" restriction on "C&D-like" loads

b. Facilities

- Siting difficulties due to noise, traffic, dust, etc.
- Too few C&D material recyclers/processors, especially in rural areas

2a. CIWMB Legislative Issues

- Beneficial reuse competition at landfills
- Inconsistent, conflicting, and/or over-restrictive: CIWMB regulations and/or CEQA.

b. Lower-Cost Options

- Cheap disposal
- Grinding materials for: biomass, or ADC
- Demolition is cheaper than deconstruction

3. Business Difficulty

- High operational costs
- Insufficient markets and unstable commodity prices for some materials
- Unpredictable/unreliable C&D material flow

2. Regulatory Status of CDI Debris Processing Operations and Facilities, October 2004

The CDI debris processing regulations define new CDI debris processing operations and facilities, place sites into regulatory tiers, establish minimum operating standards, and define recycling activities that are not subject to regulation. The effective date for the CDI debris processing regulations was August 9, 2003. "C&D Waste" is defined in Title

14 of the California Code of Regulations (CCR), Section 17225.15 (see Attachment 2 for information on the definition, composition, and management of C&D waste).

At its April 2004 meeting, the Board asked staff if the new regulations supported the diversion of C&D material away from disposal, if there had been any new facilities created, and if there were enough facilities to process C&D material. Staff had previously collected the names and descriptions of CDI debris processing sites through LEA surveys and from information collected during the development of the regulations. This information was presented to the Board. Staff indicated that this was probably an incomplete list of sites and would continue to update the list. As of February 2005, summary information for 48 sites is:

7 sites ceased operations prior to or shortly following the effective date of the regulations (August 9, 2003). The reasons for closure vary, but are mostly due to land use restrictions.

For the twenty-nine (29) sites existing on the effective date of the regulations:

- 8 have or will receive small volume CDI debris processing operation EA notifications;
- 3 have or will receive medium volume CDI debris processing facility registration permits;
- 5 have or will use the CDI debris temporary registration permits for a full permit tier phase-in;
- 12 have or will be issued transfer/processing solid waste facility permits;
- 1 site changed operations to qualify as a CDI debris recycler; and

For the twelve (12) new or planned sites operating after the effective date of the regulations:

- 6 have or will receive small volume CDI debris processing operation EA notifications;
- 3 received medium volume CDI debris processing facility registration permits;
- 1 planned site qualifies as a large volume CDI debris processing facilities in the full permit tier;
- 1 site received a transfer/processing permit; and
- 1 site is a CDI debris recycler.

Staff has determined that some site operators handling primarily C&D debris have found little or no advantages in being regulated as a CDI processing site as compared to a transfer/processing station. Some site operators wanting the option to receive material other than C&D such as green material or roadside clean up material have chosen to be regulated as transfer/processing stations. Three operators opting to be regulated under the transfer/processing regulations cited burdensome impacts from the CDI debris processing regulations.

It is difficult to determine if the regulations are in fact increasing or decreasing C&D reuse and recycling in California, or if they are neutral in that regard based solely on the information obtained at this time. C&D debris processing sites are not the only sites that reuse and recycle C&D material in California. The Board's facility database lists 237 active transfer/processing operations and facilities that are allowed to receive and process C&D debris. The database also indicates that there are 98 landfills that are allowed to receive C&D debris as well. However, there is no current data on how much of the C&D debris received at these transfer/processing operations and landfills is reused or recycled.

Relative to the status of the regulations, P&E staff conducted a Northern and a Southern California workshop in September 2004 for the purpose of soliciting feedback on a draft rulemaking plan for implementation of the AB 1497 requirements relative to public hearings and significant change findings for solid waste facility permits and other regulatory issues. The workshops also began implementation of Board direction relative to the application of specific CDI debris processing requirements to other solid waste operations and facilities, (i.e., public hearing, weight record based on scale measurements, inspections, "3 strikes," and fire plan).

3. WPMD Activities Re: C&D Debris Grants, Loans and Other Services

WPMD promotes resource conservation of C&D material by providing a range of services. Sustainable Building competitive grants provide local government funding for projects that utilize sustainable building practices to achieve diversion in California. To date, a total of \$1,527,996 has been awarded. Grant funding through fiscal year 2007/08 is now only available through the Tire Recycling Program's 5-Year Plan. These funds are available for sustainable building grants and contracts to advance, and market, building products made from California's waste tires. Grants may not be awarded to those C&D material diversion objectives that do not include waste tires in the feedstock.

WPMD also provides a C&D recycler's database, construction materials database, and model or sample specifications. The C&D recyclers' database indicates facilities that collect specific types of C&D materials for reuse or recycling. To encourage the reduction and recycling of C&D material and the use of C&D materials in construction projects WPMD provides sample specifications that can be used by the project owners to incorporate these requirements in their projects. WPMD also provides information on the use of C&D materials in residential and school construction. The Organics Section provides public information on uses of urban wood waste, which includes wood from C&D projects, and on compost and mulch, which can include some C&D materials. The Recycled Content Products database includes manufacturers or distributors of recycled-content building products.

The Reuse Assistance Grants program is a competitive grant program that provides incentives for local public agencies to promote and apply the concept of reuse to their business communities. C&D reuse or recycling specific grants were awarded as follows for fiscal years 2003/2004 for \$138,336; 2002/2003 for \$104,979; 2001/2002 for \$136,185; and 2000/2001 for \$148,352.

The Recycling Market Development Zone (RMDZ) Revolving Loan Program provides direct loans to eligible businesses and nonprofit organizations that manufacture recycled raw materials, produce new recycled products, or reduce waste resulting from the manufacture of a product. These loans promote market development for post-consumer and secondary waste materials. Since 1994, the RMDZ Revolving Loan Program has funded 20 loans to businesses for C&D related projects for a total of \$13,076,108. However, of the 20 loans, only 3 businesses processed C&D materials other than inert (asphalt and concrete) debris.

Prior work by consultants, academics, and the CIWMB on C&D policy issues is summarized in Attachment 3.

4.) DPLA Information on C&D Ordinances and Other Services

The DPLA collects information regarding local jurisdiction programs and offers specific services related to C&D recycling and reuse.

In March 2004, as required by Senate Bill 1374 (Kuehl, Statutes of 2002), the Board adopted a Model C&D Diversion Ordinance based on input at multiple workshops from local jurisdictions, the League of California Cities, the California State Association of Counties (CSAC), C&D recyclers, waste haulers, and construction and demolition industry representatives. Jurisdictions who believe a C&D diversion ordinance would fit their needs and circumstances are encouraged to use the model as a tool to draft their own custom C&D diversion ordinance. Local jurisdictions are not required to adopt their own C&D ordinance, nor are they required to adopt the Board's model ordinance.

A Local Government C&D Diversion Information (web) Page is being prepared. Because of the complexities involved in developing, adopting, implementing and enforcing a C&D diversion ordinance, this Information Page will provide jurisdictions with:

- General guidance on what jurisdictions should take into consideration when developing a C&D diversion ordinance, including advice from jurisdictions that already have developed and are now implementing C&D ordinances,
- Advice provided by builders, haulers, and C&D recyclers that have operated in jurisdictions with C&D diversion ordinances,
- Alternative methods for diverting C&D wastes,
- Frequently Asked Questions page,
- Issues related to C&D diversion ordinances that would help jurisdictions to select the diversion method best suited to their local conditions and needs, and
- Links within the Board's Model Ordinance, so that the user can easily navigate between the two documents, and links to Case Studies.

Many jurisdictions have had C&D recycling programs in place for several years, while many others experiencing rapid growth are beginning to target that growth with C&D recycling programs. These programs include local C&D diversion ordinances, policies, landfill bans, or other programs that should encourage the reduction and reuse of C&D material. Currently, about 40 jurisdictions have adopted and are implementing C&D diversion ordinances for both demolition and construction projects. For example, the City of Atherton diverted 7,746 tons of C&D material in 2001, and 7,915 tons in 2002 as a result of implementing their ordinance. Another city in San Mateo County, Hillsborough, was able to divert 7,030 tons in 2001 and 7,379 tons in 2002 as a result of their ordinance. The City of San Mateo diverted 18,000 tons in 2002 and 2003, and in 2004, have diverted between 9,000 and 10,000 tons.

The City of San Jose's C&D diversion ordinance has a unique method to simplify how contractors demonstrate compliance with the ordinance. The City "certifies" facilities that recycle C&D material so that contractors whose projects fall under the City's C&D ordinance just show they have taken their material to one of the certified facilities to reclaim their deposit, instead of providing weight tickets or other documentation. This saves time for both city staff implementing the ordinance, and the contractors who have to comply with the ordinance.

Other jurisdictions have found that addressing C&D diversion in their franchise agreements with waste haulers, instead of targeting individual contractors, also saves time

for jurisdiction staff, avoids impacting individual contractors, and can also result in greater amounts of C&D diversion. Whatever method a jurisdiction chooses to divert C&D material, however, lack of facilities will reduce any potential diversion that could result.

As of July 2004, 58 jurisdictions that have a Board-approved SB1066 time extension for meeting and maintaining the 50 percent diversion goal have also committed in their Plan of Correction to adopt a C&D diversion ordinance in their efforts to divert C&D material. An additional 44 jurisdictions not on a SB1066 time extension have plans to, or are in the process of, adopting a C&D diversion ordinance. Other jurisdictions have expressed their reluctance to adopting a C&D diversion ordinance or other mandatory C&D recycling program because of lack of facilities that would take and process this material. Others have found that certain kinds of C&D material like wood can more easily be captured and sent to biomass facilities or chipping and grinding facilities, but that mixed C&D material is difficult to divert because of a lack of facilities that can process such mixed waste.

5. C&D Work Group Findings

Based on the survey responses, information about the status of C&D material processing activities, and information about local jurisdiction ordinances and other programs, staff suggests the primary barriers (in no particular order) are.

1) Cheaper Alternatives May Hinder Recycling/Processing

- Demolition may be less costly than deconstruction for multiple reasons (high deconstruction costs; insufficient markets; recycler/processors that accept reclaimed/recyclable material at competitive prices; and unpredictable/unreliable C&D material flow).
- Competitive disposal rates for C&D material at many landfills may hinder the creation and economic viability of C&D recycler/processors and remove C&D material from the economic mainstream.

2) Lack of Ordinances or Insufficient Ordinance Implementation

- Some jurisdictions do not have local ordinances that would support C&D material diversion and recycling. In addition, lack of ordinance implementation/enforcement may discourage the development of an adequate infrastructure for the diversion of C&D material.

3) Lack of Local Economic Incentives

- Some jurisdictions lack local economic incentives that support deconstruction and C&D material recycling and thereby discourage the development of an adequate infrastructure to support C&D diversion, deconstruction activities, and the economic viability of C&D recycler/processors. For example, low or nonexistent building permit diversion deposits encourage C&D material disposal instead of deconstruction and diversion.

4) Regulatory Barriers

- Survey respondents contend that aspects of the C&D material processing regulations may result in higher operational costs and too few C&D material recyclers and processors. As noted above, however, analysis of existing sites does not indicate whether or not the CDI regulations *per se* are hindering development of new facilities. In some areas, CDI material may instead be moving through transfer/processing stations and landfills.

- Classifying a C&D debris processor in the C&D debris processing regulations as a “solid waste handler” rather than “recycler” may create a negative public image that reduces the percentage of C&D material flowing to C&D debris processors and/or causes siting problems.

5) Lack of Facilities

- There are too few recycler/processors to handle hard-to-process C&D materials, including mixed loads of C&D material and specific materials such as asphalt roofing and wood shingles, discarded carpet, gypsum/wallboard material, organics/wood waste, painted lumber, soil, and stucco. This is due to multiple factors, including many of the barriers cited as findings in this section: competition with cheap disposal, high operational costs, insufficient markets and unstable commodity prices for some C&D materials, restrictive State regulations for recycler/processors, severe material fragmentation by demolition, siting difficulties, and unpredictable/unreliable C&D material flow.

6) Lack of Markets

- Unlike metals, paper, and plastics, there are no industry-wide specifications to facilitate buying and selling recycled materials from C&D materials.
- Some stakeholders contend that biomass diversion and ADC are cheaper alternatives that may undermine C&D diversion by: 1) encouraging demolition (severe material fragmentation and mixing) over deconstruction; and 2) reducing the flow of C&D material to C&D recycler/processors. This is unsubstantiated by CIWMB data.

7) Miscellaneous

- Some stakeholders support a statewide C&D disposal ban.
- Some stakeholders support a statewide mandate to use recycled road base.
- Some stakeholders support restrictions on demolition.
- There is insufficient data on C&D reuse and recycling by local and State agencies.

B. Environmental Issues

Based on available information, staff is not aware of any environmental issues related to this item. However, information from this item could serve as the basis for future Board action regarding C&D material oversight issues to protect the environment.

C. Program/Long Term Impacts

The Board may choose to adopt all or some of the recommendations in this report, which may result in some program impacts. However, information from this item could serve as the basis for future Board action regarding C&D material issues which could result in future impacts to existing programs for the short and long terms.

D. Stakeholder Impacts

Impacts are dependent on the direction given by the Board and the subsequent actions and activities undertaken. However, information from this item could serve as the basis for future Board action regarding C&D material issues that could result in future impacts to stakeholders.

E. Fiscal Impacts

No fiscal impact to the Board results from this item. However, information from this item could serve as the basis for future Board action regarding C&D material issues, which could result in future fiscal impacts.

F. Legal Issues

Based on available information, staff is not aware of any legal issues related to this item.

G. Environmental Justice

Based on available information, staff is not aware of any environmental justice issues related to this item. However, information presented in this item report could serve as the basis for future Board action regarding C&D material issues, as well as action by other entities, which could be related to environmental justice.

H. 2001 Strategic Plan

This item supports Strategic Plan Goal 2: Assist in the creation and expansion of sustainable markets to support diversion efforts and ensure that diverted materials return to the economic mainstream.

This item supports Strategic Plan Goal 2, Objective 2, Strategy E: Facilitate research and information on new technologies

This item supports Strategic Plan Goal 4: Managing and mitigating the impacts of solid waste on public health and safety and the environment and promoting integrated and consistent permitting, inspection, and enforcement efforts by acknowledging through cooperation with the local enforcement agency enforcement of a permit consistent with current environmental values and ethics.

This item supports Strategic Plan Goal 7: Promote a “zero-waste California” where the public, industry, and government strive to reduce, reuse, or recycle all municipal solid waste materials back into nature or the marketplace in a manner that protects human health and the environment and honors the principles of California’s Integrated Waste Management Act.

VI. FUNDING INFORMATION

N/A

VII. ATTACHMENTS

1. Possible Barriers to C&D Reuse and Recycling in California
2. C&D Composition and Management, and Indicators of Economic Activity That May Result in Changes in C&D Debris Generation
3. Prior Work on C&D Debris Issues

VIII. STAFF RESPONSIBLE FOR ITEM PREPARATION

A. Program Staff:	Allison Spreadborough	Phone: (916) 341-6366
	Catherine Cardozo	Phone: (916) 341-6348
	Nicholas Cavagnaro	Phone: (916) 341-6219
B. Legal Staff:	Elliot Block	Phone: (916) 341-6080
	Michael Bledsoe	Phone: (916) 341-6058
C. Administration Staff:	None	Phone:

IX. WRITTEN SUPPORT AND/OR OPPOSITION

A. Support

Board staff is unaware of any specific written opposition for this item.

B. Opposition

Board staff is unaware of any specific written opposition for this item.

Possible Barriers to C&D Reuse and Recycling in California

The barriers included in the survey were compiled from CIWMB staff observations, excerpts from the U.S. EPA C&D Recycling Issue Paper, 2001 Jobs Through Recycling (JTR) Recycling Market Development Roundtable, and the C&D Program Strategy component of the Strategic Plan dated July 31, 1997. The primary barriers and sub-barriers in the survey were:

1) Business Difficulty for Recycler/Processor

- a. Hauling/transportation cost.
- b. Inadequate separation/storage space.
- c. Insufficient cost-effective decontamination technologies.
- d. Start-up/operating cost.
- e. Unpredictable/unreliable C&D debris material flow.
- f. Unstable commodity prices.

2) CIWMB and Legislative Issues.

- a. C&D debris is not statutorily banned from landfill disposal.
- b. Difficult for C&D processing operations to compete due to relatively cheaper costs for beneficial reuse at landfills.
- c. Inconsistent, conflicting, and/or over-restrictive:
 - o CIWMB regulations, and/or
 - o California Environmental Quality Act (CEQA)
- d. Lack of documentation available on recycling end uses.
- e. Material Recovery Facilities (MRFs) without a mandatory recycling rate for C&D debris.
- f. No statutory requirement for reuse and recycling of C&D.
- g. Overuse and/or misreporting of C&D debris used for landfill alternative daily cover, and/or "beneficial reuse", thereby undermining C&D reuse and recycling markets as a highest and best use.
- h. Statutory requirement that non-disposal facility be identified in a jurisdiction's NDFE for the permit to be found in Conformance with that planning document.
- i. Waste streams are not prevented from direct landfill disposal nor is preprocessing of C&D debris for recycling required.

3) Facilities.

- a. Siting difficulties.
- b. Mixed processing, especially for higher and best use markets, often costs more than disposal.
- c. Too few C&D debris recyclers/processors.
- d. Too few "last chance," "buy-back," C&D debris reuse/salvage operations.
- e. Too few "resource recovery parks."

4) Industry Education/Training.

- a. High rate of workforce turnover.
- b. Inadequate cost-benefit data.
- c. Inadequate education materials on “how to” recycle C&D debris.
- d. Inadequate information on “where to” recycle C&D debris in my area/project area or what site-specific recycling opportunities exist.
- e. Lack of training for designers on the standards and use of recovered C&D materials.
- f. Lumber is used extensively for mulch, ADC, or biomass fuel thereby undermining reuse markets as a highest and best use.
- g. Project manager and deconstructor miscommunication.
- h. Waste Management Plan requirements not adhered to or appropriately monitored and tracked to verify compliance.

5) Local Enforcement Agency

- a. High permit and inspection fees.
- b. No C&D debris diversion support.
- c. Minimal monitoring of landfill beneficial reuse activities, by category and weight,

6) Local Mandates

- a. Franchise haulers that aren't required to take C&D debris in roll-offs to C&D debris recyclers,
- b. Inconsistent, conflicting, and/or over-restrictive:
 - o local planning dept requirements, and/or
 - o use permits
- c. Not differentiating for diversion purposes, between inerts and mixed solid waste materials entering a processing facility,
- d. Not having a 50 percent recycling provision for all construction or demolition projects regardless of the project size.
- e. Not having a separate franchise hauler agreement for C&D debris.
- f. Not imposing a landfill disposal surcharge or business tax on C&D waste haulers and C&D waste contractors.
- g. Not lowering franchise hauler tipping fees if the hauler meets certain C&D debris recycling requirements.
- h. Not posting a newspaper advertisement for salvage material types and quantities before permitting a demolition project.
- i. Not requiring deconstruction as part of demolition permitting.

7) Local Ordinances, Plans, Policies, Programs & Procedures

- a. Deconstruction project, land use, and zoning restriction approvals that don't consider timing, scheduling, and cost issues.
- b. Inadequate local ordinance enforcement.
- c. Insufficient local C&D debris diversion ordinances.
- d. Insufficient local economic incentives, e.g.:
 - o Disposal fee exemption for C&D debris recyclers is lacking.
 - o Building permit C&D debris diversion deposit is too low or lacking.
- e. Jurisdictions working independently of neighboring jurisdictions on C&D Debris Recycling Plans, policies, reporting requirements, or diversion programs.
- f. Pressure to discourage jurisdictions from having Recycling Plans, policies, reporting requirements, or diversion programs that require higher diversion rates or higher and better market use requirements than neighboring jurisdictions.

8) Lower-cost Options

- a. Demolition instead of deconstruction.
- b. Grinding materials for:
 - o Biomass, or
 - o Landfill alternative daily cover
- c. Disposal.

9) Markets

- a. Inadequate markets for discarded carpet.
- b. Inadequate markets for gypsum/wallboard debris.
- c. Inadequate markets for asphalt roofing and wood shingles.

10) Public Education

- a. Inadequate education materials on "how to" recycle C&D debris.
- b. Lead and asbestos contamination fears.
- c. "Not in my back yard" (NIMBY) issues.
- d. Public apathy.

11) Recycled Content Product (RCP) Difficulties

- a. High initial procurement cost.
- b. Inadequate industry standards.
- c. Inadequate proven, performance-based specifications.
- d. Inadequate test methods.
- e. Inadequate local public works and Caltrans contract specifications for recycled materials in roads, road base, trenches, backfill and erosion control.
- f. Inferior quality bias.
- g. Long procurement lead time.
- h. Multiple green building rating systems.

- i. No incentives for designers.
- j. Outdated ordinance and building code product requirements.
- k. Product test cost.
- l. Unavailability.
- m. Unstable supply.
- n. User training needs.

12) Regulations for C&D Debris Processing

- a. 60% recycling requirement of the medium volume processing tier.
- b. "Construction work" definition limitations.
- c. Low permit tier placement thresholds.
- d. No new facility "phase-in" allowance to higher permit tiers.
- e. Public Hearing requirement.
- f. Scale requirement.
- g. "Solid waste handler" versus a "recycler" regulatory status.
- h. The "no residual" restriction on "C&D-like" loads.

13) Other

- a. List any alternate barriers.

C&D Composition and Management

C&D waste is defined in 14 CCR 17225.15 as "the waste building materials, packaging and rubble resulting from construction, remodeling, repair and demolition operations on pavements, houses, commercial buildings and other structures." This definition can be a waste characterization dilemma if some of the individual material types typically found in C&D debris are not categorized as C&D debris material types. For example, the Board's 1999 waste characterization study of statewide disposal includes post-consumer corrugated boxes, wood pallets, food and beverage containers, caulking tubes, and paint containers in categories other than C&D, including: Paper, Glass, Metal, Plastic, Other Organic, Household Hazardous Waste, and Mixed Residue. These wastes that came from construction sites were therefore not included in the "C&D" material tonnage estimates in the study. Significant quantities of these material types annually enter the waste stream from building construction sites. This means estimated tonnage of C&D material types from a waste characterization study may understate "C&D debris" tonnage as commonly understood and as defined in 14 CCR 17225.15.

Comprehensive data on the amount of C&D debris generated or diverted within California is not readily available. According to the Board's 1999 sampling of solid waste disposed in California, Board-defined C&D material types accounted for 21.7%, or about 8.7 million tons, of all 2003 disposal. The Board estimates California's 2003 solid waste diversion at 35.8 million tons, but the C&D percentage of this diversion tonnage is unknown.

In 2005, the Board will conduct a third study that is limited to disposal in four major metropolitan areas of the State. For information on economic indicators that may reflect change in the amount of C&D debris generated, see the second page of this Attachment.

The U.S. EPA Report #530-R-98-010, *Characterization of Building-Related Construction and Demolition Debris in the United States* indicates the most common C&D debris management practice in the U.S is to bury it at C&D landfills, MSW landfills, and unpermitted sites. In 1996, 35 - 45% was buried at C&D landfills; 30 - 40% was managed (diverted) on-site, or buried at MSW landfills or unpermitted landfills; and 20 - 30% was recovered for processing & recycling. Although a high C&D debris diversion rate is achievable with deconstruction/"hand-wrecking" because contamination is minimized, it is labor intensive and requires more time than traditional demolition. It is unknown how much C&D debris (i.e., the wood portion) is sent to biomass facilities as boiler fuel, or is beneficially reused in the construction and operation of California landfills.

Indicators of Economic Activity That May Result in Changes in C&D Debris Generation

There are several construction activity indicators, including: (a) construction employment by county for 35 of 58 California counties, (b) new single-family and multi-family housing unit building permits by city or county, and (c) residential, private non-residential, and public works building permit valuations by city or county. While these indicators may be related to C&D debris generation and disposal, the strength and timing of these relationships are unknown.

Construction employment statewide, and for 36 of California's 58 counties, is available from the Employment Development Department. The Construction Industry Research Board, a non-profit research center established in 1974 and funded by grants from the construction industry, publishes construction data such as:

- Residential new housing units and building permit valuations by county,
- Private nonresidential building permit valuations by county, and
- Public works construction by agency type, construction category, and county.

According to the U.S. EPA report, the composition of C&D debris from buildings is highly variable and depends on the type of activity. At construction and renovation sites, wood is typically the largest component, and these sites generally produce cleaner materials than demolition sites. Construction and renovation sites tend to dominate the C&D waste stream in fast growing areas. At demolition sites, concrete is typically the largest component. According to a February 1998 issues paper, *Constraints And Opportunities: Expanding Recovery In The Demolition Industry*, prepared by the Community Environmental Council (CEC) of Santa Barbara, California, the National Association of Demolition Contractors estimate the recovery rate for concrete is 75 to 85% for private sector demolition projects, and 20 to 30% for public sector demolition projects. This same issues paper reports that higher wage rates required at public sector projects result in lower recovery rates. The U.S. EPA report states that demolition sites tend to dominate the C&D waste stream in many urban areas.

Prior Work on C&D Debris Issues

A number of academics and groups have examined C&D issues and pointed out significant non-regulatory barriers ranging from markets to research. According to *Integrated Solid Waste Management: Engineering Principles and Management Issues* by Tchobanoglous/Thiesen/Vigil, McGraw-Hill, 1993, C&D debris reuse & recycling opportunities depend on:

- Markets for the individual materials
- The ability to process commingled C&D debris or to separate the individual materials
- The economics of materials recovery, and
- Materials specifications.

A February 18, 1997 CIWMB *Construction and Demolition Waste Study* was prepared by the University of California, Los Angeles Extension. It collected existing data about C&D generation from a literature search of published studies, and a telephone survey of a representative sample of contractors and waste industry professionals. The research focused on waste generated from conventional building practices, road construction and other public works, and disaster-related clean-up and repair activities.

In November 1997, the CIWMB adopted C&D Recycling as a major initiative in its strategic plan to achieve the requirements of the California Integrated Waste Management Act of 1989 (AB 939, Sher, Chapter 1095, Statutes of 1989). In implementing its 1997 Strategic Plan, the Board created priority teams, two of which centered on market development for materials that comprise major portions of the waste stream: organic materials, and C&D debris. The “greening” team focused on diversion outreach programs, partnerships, and demonstrations of the benefits of recycling and composting of organic materials. The C&D priority team’s efforts evolved into the current sustainable building program.

In 1998, the C&D priority team compiled work elements surrounding various C&D issues:

- Assist operators and local agencies in siting & permitting,
- Develop an economics worksheet for contractors,
- Encourage and establish co-op salvage yards, and
- Issue loans to C&D processors and recyclers.

According to a February 1998 Gildea Resource Center: Community Environmental Council (CEC) issues paper, *Constraints and Opportunities: Expanding Recovery in the Demolition Industry*, the factors that influence demolition salvage include:

- contract limitations,
- equipment,
- labor costs,
- landfill costs,
- product liability,
- secondary material markets, and
- timing of project schedules.

The CEC paper gives the CIWMB nine recommendations for C&D debris recovery. The CEC recommended working with public contracting agencies to evaluate requiring reuse and recycling in project bids and remove barriers to material reuse and recycling in the language, process and procedures of public contracting. It also recommended expanding market development programs to specifically target business development and attraction efforts towards companies that process or manufacture with materials that are difficult to recycle, including: small dimensional lumber, drywall, roofing materials, brick and other problem demolition materials.